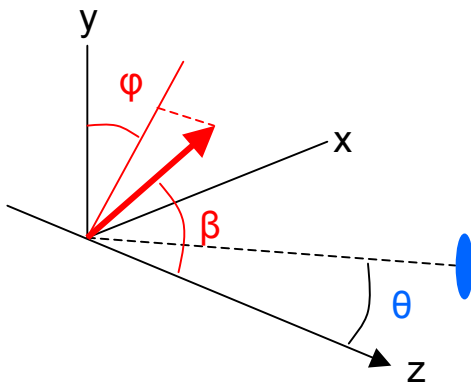


polarization from ion source:

$$p_z = f_1 - f_{-1} \quad p_{zz} = 1 - 3f_0$$

General equation for change in cross section:

$$\sigma(\theta) = \sigma_0(\theta) \left(1 + p_z \sin \beta \cos \phi \sqrt{3} i T_{11}(\theta) + p_{zz} (3 \cos^2 \beta - 1) \frac{1}{\sqrt{2}} T_{20}(\theta) \right. \\ \left. + p_{zz} \sin \beta \cos \beta \sin \phi \sqrt{2} T_{21}(\theta) - p_{zz} \sin^2 \beta \cos 2\phi \frac{\sqrt{3}}{4} T_{22}(\theta) \right)$$



limiting case:

$$\sqrt{3} p_{zz} \langle T_{21}(\theta) \rangle \sin \beta < 2.9 \times 10^{-5}$$

+/- difference
as big as 0.1

over acceptance
 $T_{21} = -0.188$

$$\beta < 8.9 \times 10^{-4}$$

about 1/20 degree!

In 1 second there are 10^6 turns. 1/20 degree $\sim 10^{-4}$ turns.
Stability or control of “freezing” E-field must be $1:10^{10}$.

Helpful tools:

Up/down asymmetry is sensitive to β .

Comparing different angle ranges using T_{20} measures p_{zz} .

... You can see what is happening independent of the error.